Environmental

The U.S. Army Corps of Engineers' commitment to environmental stewardship is an important part of our continual operations at Center Hill Dam, as well as a significant factor in the rehabilitation work. While all the project's resources are significant, a key resource is the Caney Fork tailwater which supports a high quality put-and-take trout fishery. The water released from the dam is withdrawn from the deep, cold portion of the lake.

A rainbow trout from the Caney Fork River

Another important factor is the oxygen levels in the released water. Since 2004, the Corps has blended water released through a sluice gate with hydropower releases during critical periods of low dissolved oxygen levels (typically late summer and fall) to keep oxygen levels viable for the trout and the aquatic life. The sluice is a 4 x 6-foot culvert located at the base of the concrete portion of the dam. Sluicing water in the fall keeps oxygen levels adequate downstream, which encourages diverse populations of aquatic insects. The cool, oxygenated water combine to make the Caney Fork capable of sustaining and growing trout in abundance.

The 11,000 pound steel bulkhead (orifice gate) was designed and built to provide an aerated minimum flow as mitigation for loss of seepage flow.

Protecting the River during Construction

Throughout construction, Corps contractors are obligated to adhere to stringent measures to ensure protection of the project's environmental resources. These measures include a wide variety of construction best management practices as well as specific measures to ensure protection of receiving waters from grouting operation wastes. Settling ponds and water quality holding and treatment ponds are currently being constructed downstream of the dam for these purposes.

Mitigation for Seepage Loss

The current seepage flow through and around the dam is approximately 125 cubic feet per second (cfs). As environmental mitigation to continue a minimum flow into the Caney Fork River once the seepage is reduced, the overall plan includes manufacture and installation of an orifice gate. The orifice gate is a steel plate with open ports. The orifice gate provides an approximate 200 cfs aerated minimum flow. While the orifice gate flow is not adequate to replace the fall sluicing (1,600 cfs), it is an important tool to maintain constant minimum flow. As a contingency plan, a small 60-year old turbine in the powerhouse will be rehabilitated. This turbine is called the Station Service Generator and was designed to provide back-up power for the powerhouse. The rehabilitated station generator will help ensure a constant minimum flow.

The orifice gate was lowered into position on the upstream base of the dam in August 2008.

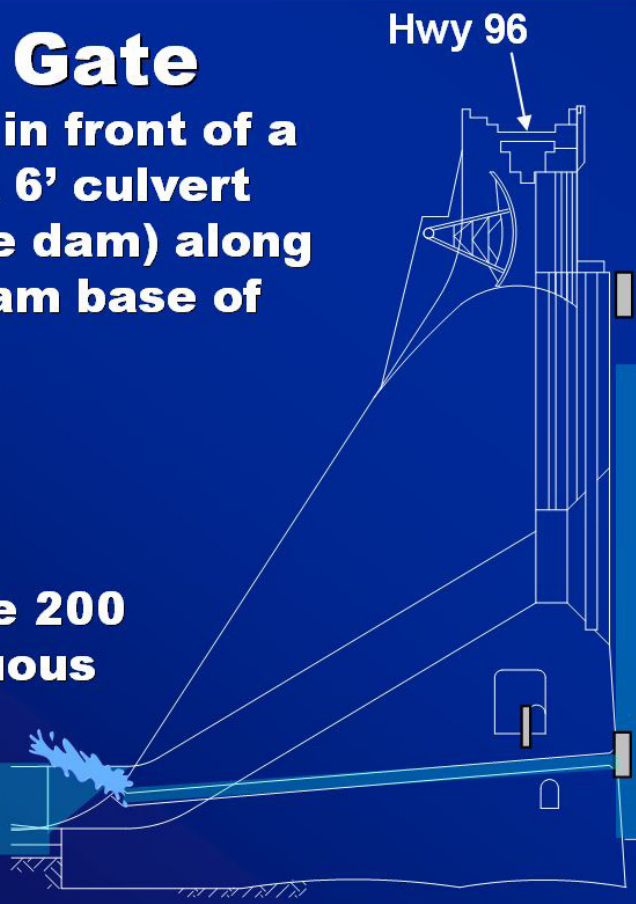
US Army Corps
Of Engineers ®
Nashville District

Section of Dam
Orifice Gate position

Orifice Gate

in position in front of a sluice (4' x 6' culvert through the dam) along the upstream base of the dam

Will provide 200 cfs continuous flow



- 696 - top of dam
- 685 - flood control pool

orifice gate beginning position

- 549.9 – C_L penstock

orifice gate final position

- 496 – sluice gate
- 470 - streambed

The orifice gate is currently in the lower position within one of the dam's six 4' x 6' low level culverts called "sluices."